University
Archives

P87-0025 (03)

university of toronto
computing services

UTCS ComputerNews

Features

Organizing a PC's Hard Disk 1
Recovering Data from a Damaged PC Disk 3
Statistics on the IBM PC 5
Macintosh Announcements 6
Macintosh Warning 7
New Anagram Decomposer for Microcomputers 8
UTCS and PostScript Directions 8
Noise on Dial-in Lines 9
Accounting: University Fiscal Year End 10
UNIX News 11
New Tools for CMS MAIL 14
Free NetNorth (Electronic Mail) Demonstrations 15
WSCRIPT Version 86.1 16
UTCS Language Processor Maintenance 16
VM/CMS WATFOR-77 Version 1.5 17

Departments

Change Committee 17
Personnel Changes 18
UTCS Noncredit Short Courses 18
Introductory Cray Training 18
Recent Acquisitions in the Computer Library 21

Documents at UTCS 23
Consulting and Enquiries 25
UTCS Directory 25
Committees on Computing 25
UTCS Terminal and Advising Sites 26
UTCS Services 27
Software List 28

ISSN 0315-4661 April 1987 No.238

Publisher

University of Toronto Computing Services
Toronto, Ontario
Canada M5S 1A1

Editor: Martha Parrott

Publications Assistant: Elizabeth Weitmann

Publication Date: *April 1, 1987*

Subscriptions

Subscriptions run for one year, beginning each January. Changes should be entered on the tear-out form at the back of this issue and mailed to ComputerNews, Engineering Annex, Room 207 (or phone 416-978-4034).

ComputerNews is published 8 time yearly by the University of Toronto Computing Services. Enquiries should be directed to:

The Editor
ComputerNews
11 King's College Road, Room 207
University of Toronto
Toronto, Ontario
Canada M5S 1A1

Network address:
PARROTT at UTORONTO
(NetNorth/BITNET/EARN)

Unless otherwise indicated, network addresses appearing after author's names pertain to NetNorth/BITNET/EARN.

Permission is granted to reprint articles from ComputerNews for noncommercial purposes provided the author, publication and issue are acknowledged.

UNIX is a trademark of AT & T Bell Laboratories.
SAS is a trademark of SAS Institute Inc., Cary, N.C.

Organizing a PC's Hard Disk

Not too long ago, according to some market surveys, the number of PC owners who had hard-disk drives installed in their PCs surpassed the number of PC owners using only floppy drives. This comes as no surprise to many of us, as we have seen the trend toward hard disks over the last few years.

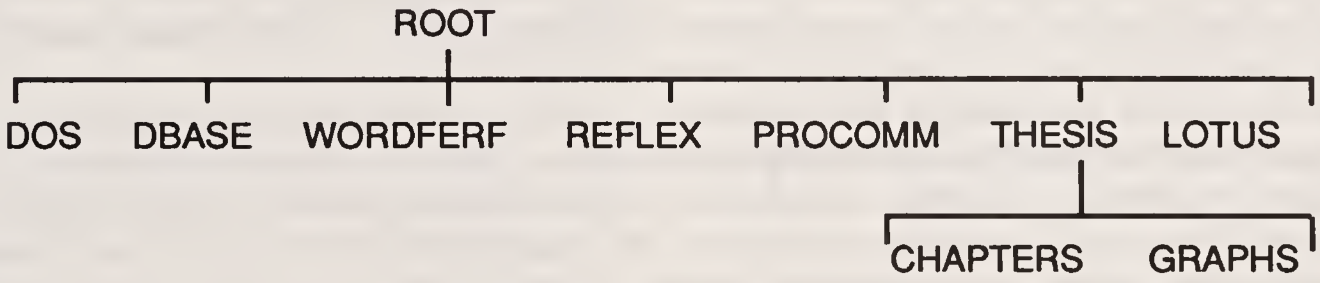
The reasons for this trend are fairly simple. First of all, hard-disk prices have dropped significantly: for instance, a Seagate 20M drive with disk controller cost around $2000 two years ago but is now available for under $600! Add the fact that productivity increases when a hard disk is used, and the trend is not difficult to predict.

For many people, however, the hard disk presents a challenge: How should I organize it? How can I get the most out of it? The tips below should help answer these questions.

Start by understanding the hierarchical directory structure of a typical hard disk. (Although this structure can be used on floppy diskettes as well, most people have not done so.) Because the hard disk can contain many files, it could take a long time for you or DOS to locate a particular file. Grouping related files in separate directories can reduce the time required to locate a file.

A common analogy is to think of your hard disk as a filing cabinet. Each directory corresponds to a drawer of the cabinet. Within a drawer, you can have one or more documents and/or one or more file folders, each containing documents and/or more folders. Each ''file folder'' corresponds to a DOS directory, each ''document'' to a DOS file.

For instance, the organization of a typical hard disk might be represented, in terms of its directories, as follows:



You can easily see from the diagram that the graph you created to include in your thesis would be located in the directory called ''GRAPHS,'' which is a subdirectory of the THESIS directory, which itself is a subdirectory of the ROOT directory. You need only search through the files in the GRAPHS directory; this would usually be faster than searching the hundreds or thousands of files on your entire hard disk.

Having absorbed the concept of directories, you arrange your files in appropriate groupings, i.e., directories. Use the DOS commands MKDIR and CHDIR (MD and CD are abbreviations) to Make and Change directories respectively. For example, to create a THESIS directory and its subdirectories, do the following:

```
CD \            -- start at the root directory
MD THESIS       -- create the THESIS directory
CD THESIS       -- switch to THESIS as the current directory
```

continued...

Organizing a PC's Hard Disk continued

```
MD CHAPTERS          -- create the CHAPTERS subdirectory
MD GRAPHS            -- create the GRAPHS subdirectory
CD \                 -- return to the root directory
```

Now that you have more than one directory, a full DOS file specification requires not only the disk drive and file name but the *path* through the necessary directories as well. The path is simply a navigational method to locate the particular ''file folder.'' DOS uses the backslash character ''\'' to separate directory names. So the graph we discussed above might be called C:\THESIS\GRAPHS\MICKEY.PIC. ''C:'' is the drive designator (most commonly C: for hard disks); ''\THESIS\GRAPHS\'' is the path (the root directory is designated by the initial backslash prefix); and MICKEY.PIC is the actual file name.

Now the fun begins. To make the most of your directory setup, create in your root directory an AUTOEXEC.BAT file consisting of a number of DOS commands to be executed each time you boot your machine. A typical AUTOEXEC.BAT is given below, with annotations following:

```
date                                              1
prompt $p$g                                       2
path c:\;c:\dos;c:\dbase;c:\wordperf;c:\procomm   3
set procomm=c:\procomm\                           4
cls                                               5
```

(Note: do not include the numbers to the right; they are for reference in this article only.)

1. Prompts you for today's date. Optionally, you could include the TIME command on a separate line to prompt you for the correct time. Alternatively, if you have a clock installed, you would issue the command to read the clock, as in ASTCLOCK for the AST Six Pack Plus clock. With either method, it is recommended that you set the clock properly to ensure all your files are meaningfully time-stamped.
2. This sets the DOS prompt to display the current directory as part of the DOS prompt. Thus, instead of C> you will see the full path as well, as in C:\THESIS\GRAPHS>. As you change directories, the DOS prompt will change accordingly. At the root it will be C:\> .
3. The path is set to a sequence of directory names. Usually you have the root followed by your DOS directory, and then your application program directories. Each is separated by a semicolon. The sequence is important: if you enter a command at the DOS prompt to execute a .COM, .BAT, or .EXE file, DOS tries first to locate the corresponding file in the current directory. If it is not found, DOS then searches, in order, each directory in the path. If found, it will be executed; if not, a ''bad command or file name'' message is issued. Most programs work well with the path command; the one notable exception is WordStar, which cannot take advantage of paths because of its use of overlay (.OVL) files.
4. This command sets the values of a DOS environment variable called ''procomm,'' which is needed when ProComm is executed.
5. This simply clears the screen and produces the C:\> prompt.

The AUTOEXEC.BAT can be created by any word-processing software capable of writing plain ASCII text. WordStar in nondocument mode and WordPerfect using <Ctrl><F5> are two examples. You can also create it directly from the keyboard by first typing COPY CON AUTOEXEC.BAT <Enter> and ending with <F6><Enter>.

Finally, in addition to setting up a useful AUTOEXEC.BAT, you should create a CONFIG.SYS file residing in your root directory. It specifies the number of files you may have open at once, and the number of memory buffers to set up for DOS (the significance of these and other configuration commands is discussed in the DOS manual). For general purposes, the following is recommended:

```
FILES=20
BUFFERS=24
```

continued...

Organizing a PC's Hard Disk continued

Another statement included in the CONFIG.SYS file might be DEVICE=device_name; device_name could be the name of a device driver you require for an external hard disk or an internal disk larger than 32M. Again, CONFIG.SYS must be a plain ASCII text file, as discussed above. (Before changing an existing CONFIG.SYS, be careful to jot down its contents.)

After creating your new CONFIG.SYS and AUTOEXEC.BAT, reboot your machine. You will find programs run faster, and you will be able to organize files more efficiently.

One last point: because you are now storing most of your files on a single medium, i.e., your hard disk, you must be doubly careful not to get caught without backups of your work. Consider using a floppy-based package such as FASTBACK or a tape backup system to keep extra copies of your working files, or simply copy to floppy those files that are important to you, each time you change them. When a hard disk needs repair, it is often the case that all data on the disk is lost; putting all your eggs in one basket is dangerous. Make backups.

Paul Roth
PROTH at UTORONTO

Recovering Data from a Damaged PC Disk

Have you ever spilled coffee on to your floppy diskette, or stood by helplessly while it lay in the street, right in the path of a semi-tractor-trailer's wheels? Have you ever looked over your colleague's shoulder just as he was typing "erase *.*" on the fixed-disk directory of your personal computer? In many cases, the situation is not as bad as it looks. There are ways to minimize the consequences of disasters to your disk data. (This article treats the IBM PC and compatible computers and is based in part on information from a session I recently attended at SHARE, the IBM Large-System Group Conference. For information regarding other systems, please call Advising Services at 978-HELP.)

The data on a disk is divided into "tracks," like the grooves on a record. These tracks are further divided into smaller sections called "sectors," which are pie-slice-shaped sections of the disk's surface (see *Figure 1*). A file on the disk is composed of one or more sectors, each containing a chunk of the file's data. A "directory," or table of contents, tells DOS the names of all the files on the disk, and where they begin (the first sector). A special table, called a "File Allocation Table" (FAT), tells DOS where the subsequent sectors in a file are.

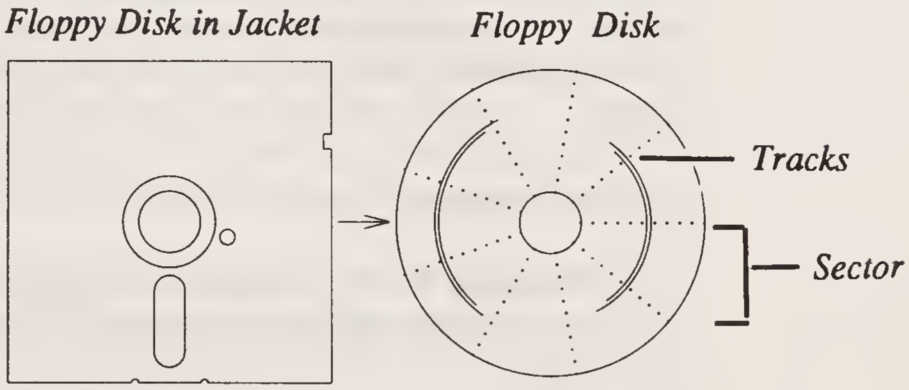


Figure 1

Several utility programs are available that allow you to get your data back in most cases, if you have not altered the disk by writing to it since the disaster occurred. PC-DOS Version 3.2 provides the RECOVER command for this purpose, and there are some commercially-available products as well. Two such products are IBM Disk Repair and the Norton Utilities set of programs.

These programs work like this. When you type a command like "erase *.*" you are not actually wiping the data off your disk. Instead, the entry

continued...

Damaged PC Disk continued

in the directory is altered, so that DOS now treats the space that was occupied by the original data as free space, available for use by other data. The original data remains intact, until the disk has new data written to it. Even then, some or all of the sectors containing the original data may be left intact, although they may be more difficult to identify. (This is where ''fragmentation'' can be significant. See discussion below.)

Moreover, damage to the disk's surface usually means that only the damaged sectors will be lost. Data-recovery programs allow you to go through the disk and recover data from any intact sectors (the ones that haven't been scratched by the wheels of the semi-tractor-trailer).

To increase the usefulness of these programs, it is worthwhile to take a few minutes periodically to ''unfragment'' your disk files. As a disk is used more and more, data is written to different sectors on the disk; a file will not necessarily be written to sequential sectors and is thus fragmented, or spread all over the disk. It is possible to put these fragments back in sequential order. If you actually have to go hunting through the sectors of a disk to find your data after a disaster, an unfragmented disk can make the task much easier.

You can unfragment in several ways:

1. The DOS COPY command, copying to a new, unused disk, will unfragment a dataset.
2. Several commercial disk-data management utilities, such as Disk Optimizer and PCOMPRES, can do this unfragmenting right on the original disk.

Most disk-data recovery programs can restore pieces of data as small as one sector. Therefore, if a disk has been physically damaged, you will lose data in any sector that has been affected by damage. At the SHARE session, I heard a user report that it is possible, if you have good aim, to shoot a .22 calibre bullet through a 360K floppy diskette, and lose only one sector (see *Figure 2*). Larger calibres, he reported, would cause the loss of multiple sectors. UTCS does NOT recommend that you try this yourself.

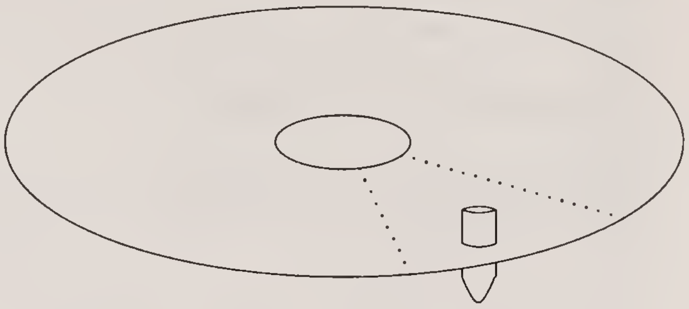


Figure 2.

To avoid recovery problems in the first place, it is a good idea to have a second copy of your data stored somewhere. There are several ways to do such a backup:

1. PC-DOS has a pair of commands, BACKUP and RESTORE, that can be used to make backup copies of your disk data from floppy diskettes or fixed disk, on another disk.

   Note: The RESTORE command will not work correctly with the PC-DOS system files (the ''hidden files'' IBMBIO.COM and IBMDOS.COM). If the disk you want to restore has the system files on it (i.e., you want to be able to use it to boot your machine), first FORMAT the target diskette with the /S option.

   Use the RESTORE command with the /P option. Refer to the section ''Restoring System Files Using the DOS RESTORE Command'' in the *IBM DOS Reference Manual* (Version 3.20, p. 7-170).

2. Make simple disk-to-disk copies of all your files.
3. Use any one of the commercially-available backup programs, e.g., FASTBACK.
4. Use any of the commercially-available devices for large-quantity storage of data (e.g., the Bernoulli Box removable fixed-disk system or the Tallgrass and Mountain streaming-tape drives).

For further information on any of these methods, please call Advising Services at 978-HELP.

Jon Alexander
JON at UTORONTO

Statistics on the IBM PC

For the past year and a half, both SAS/PC and SPSS/PC+ have been available at UTCS for demonstration. UTCS offers Class A support for both of these micro packages, and the University has a site license for SAS/PC. However, the Statistical and Numerical Analysis Computing (SNAC) Group at UTCS has recently acquired four additional statistical packages that run under MS-DOS on IBM-compatible microcomputers. Presently installed on the SNAC micro are SYSTAT, STATPRO, Minitab, and PowerStat, as well as SAS/PC and SPSS/PC+. Potential users can make an appointment for a demonstration to see if any of these packages meet their needs. SYSTAT, STATPRO, Minitab, and PowerStat can all be run on a PC without a hard disk. This feature may be appealing to users who have not yet invested in a hard drive. These four products currently have Class C support from UTCS.

Descriptions of SAS/PC, SPSS/PC+, SYSTAT, and STATPRO are included in the *Academic's Guide to Microcomputer Systems*, 2nd Edition, available from the UTCS Information Office.

PowerStat is a menu-driven statistical package with a wide range of available functions. It can be run on a PC with two 360KB floppy drives, or it can be installed on a hard disk.

The package can display and print stem and leaf diagrams, scatter plots, histograms, and box plots, but it provides character graphics only. The analysis-of-variance capability is a particularly impressive feature of PowerStat. It can handle many types of analysis, balanced or unbalanced, with as many as ten factors.

A PowerStat dataset can contain up to 150 variables (numeric and string) and the number of records is limited only by storage.

Minitab is a smaller version of the package currently available on CMS. Like its mainframe cousin, this micro version is command driven, and a micro session appears very similar to an interactive session on CMS. In terms of the functions offered, Minitab is the most limited of the six micro packages available for demonstration.

As mentioned at the beginning, SAS/PC has a special place among the statistical packages we have, since the University has acquired a site license for it. This means that we can distribute SAS/PC to University employees and students who intend to use it for university-related research, for a nominal annual fee ($50 at present; diskettes and manuals are extra). To ensure compliance with the above condition, we require that the annual fee be paid from University or research funds. At the moment, we have licensed SAS/PC for about 140 micros at the University. Users include a number of cross-appointed faculty at affiliated teaching hospitals.

Since the licensing is done on a yearly basis (July through June), it must be renewed each June (July at the latest). Users purchasing the next year's license are given a special code that validates their package for that year. Current licensees will be notified in May about renewal procedures.

The SAS Institute is expected to enhance SAS/PC with additional modules, such as SAS/FSP and SAS/GRAPH, in the near future. For more details on future developments of SAS/PC, see the article on the recent SUGI conference in this issue of *ComputerNews*.

SAS/FSP is currently in beta-test by the SAS Institute. The University of Toronto is one of the beta-test sites. Users who would be willing to help us to evaluate the product should contact Bill Fehlner at 978-6509.

Until recently, University employees interested in acquiring SPSS/PC+ could get it through UTCS at a significant discount. However, SPSS

continued...

Statistics on the IBM PC continued

Inc. has changed its pricing structure, and purchasing the package through UTCS is now more expensive than obtaining it directly from SPSS Inc. For this reason, the UTCS Information Office is no longer placing orders for the product. However, we continue to offer support to current owners of SPSS/PC+, and a copy of the product is still available for demonstration.

Questions concerning any of these packages should be directed to UTCS Advising Services, 978-HELP.

Dr. A.J. Pindor
APINDOR at UTORONTO

Macintosh Announcements

On March 2, Apple Canada Inc. introduced its additions to the Macintosh personal computer family. These included the Macintosh SE, various storage products, memory upgrade kits, an extended keyboard (IBM-style), two display monitors, various products that permit integration and enhancements of MS-DOS files with Macintosh files, and an implementation of AT&T's System V UNIX software. The key product introduced was the Macintosh II. This article deals with the Mac II and the Macintosh SE and is based on information obtained at Apple's Announcement Seminar.

Macintosh II

The Mac II uses a 32-bit Motorola 68020 microprocessor operating at 16 MHz. It includes a 68881 floating-point arithmetic chip said to perform mathematical operations up to 200 times faster than the 68020 chip, resulting in a processing speed of 2MIPS (million instructions per second). The machine will also feature a transfer rate of more than 1M per second over its SCSI (Small Computer Systems Interface). The standard 1M RAM will be expandable to 8M on the logic board and may be further expanded up to 1.5G (Gigabytes) with add-on boards.

Ports provided are Mac Plus-compatible and include a SCSI connection, two serial ports, an external SCSI disk-drive interface, and a sound port capable of 4-voice stereo. Six slots are provided that use the high-performance Nu Bus protocols. This protocol supports 8-, 16- or 32-bit data paths, permitting fast transfer of large quantities of data between add-on cards and the logic board. The cards may be placed in any of the slots and the feature of allowing the cards to "identify" themselves makes their use easy and flexible in terms of system configuration.

The video interface provided by the video card supports both of the high resolution monitors that were also introduced: a 12-inch monochrome monitor or a 13-inch RGB (red-green-blue) colour monitor. Both are now capable of displaying the full width and over half the length of a page. The video card can simultaneously generate 16 colours or shades of gray from a palette of more than 16 million colours. If the Mac II 8-bit Video Expansion Kit is added, the card can generate up to 256 colours or shades of gray.

The ADB (Apple Desktop Bus) standard interface for input peripherals (keyboard, mouse, etc.) is provided and permits up to 16 input devices to be connected. There is now a choice of two keyboards, the Apple Keyboard and the Apple Extended Keyboard; the latter includes function keys and special purpose keys for using alternative operating systems. The keyboards are packaged and sold separately. The Mac II has room to hold up to two 800KB floppy-disk drives and one 20-, 40- or 80M hard disk. The 40- and 80M hard disks feature a very fast average access time of less than 30 milliseconds.

Macintosh SE

The Macintosh SE has the more familiar look of the Mac 512K and Mac Plus. However, there are several modifications. It uses the same Motorola 68000 chip running at 7.8 MHz as the Mac Plus, but it is said to have an overall performance improvement of 15-20% achieved through a custom-designed chip. In addition, the

continued...

Macintosh Announcements continued

SCSI hard-disk performance is now up to two times faster. A card to provide additional functionality (such as those for communications, performance improvement, external video monitor or MS-DOS compatibility) may be placed in the one SE-Bus expansion slot.

The SE comes with a minimum 1M RAM, expandable to 4M. The machine may be configured with either one 800K floppy-disk drive and a 20M SCSI internal hard-disk or two 800K floppy-disk drives. Additional external 40- or 80M hard disks are also available.

External ports on the machine will be Mac Plus-compatible. These include a SCSI connection, two RS-422 serial ports, an external disk-drive interface, and a sound port. AppleTalk is built in.

Included with the machine is the Apple Desktop Bus, which simultaneously connects up to 16 input devices, such as a keyboard or mouse. Users again have a choice of the keyboards already mentioned.

At this time, only the Mac SE is available. The Mac II will not be available until the summer. The suggested list price for the Mac SE begins at $4,795 and for the Mac II begins at $6,495. Currently, at the U of T Computer Shop, a Mac SE with dual disk drives and a standard keyboard is priced at $3282 (including University discount). With a 20M hard disk the cost is $4308. At the time of writing, only the dual drive configured machines were in stock. One important feature of both these machines is that *nearly* all previous Mac software will run on them. Here in the Lab, we look forward to evaluating the machines when they become available.

Alicia Damley
DAMLEY at UTORONTO

Macintosh Warning

A recent rash of external drive problems on the Mac needs to be addressed. If you haven't heard of them yet, let me be the first to inform you.

Do not place your external drive on the left side of your Mac!

This simple warning could save you a lot of unnecessary disk problems or the loss of some very important files.

Why? The Macintosh power supply and video board are located on the left side of the case. The electrical and magnetic fields created by these boards in conjunction with the disk drive motors are enough to give an invalid disk read (i.e. *This disk is damaged: Do you want to initialize it?-or-This disk is unreadable: Do you want to initialize it?*) or actually cause disk damage making the disk unreadable.

There is a SIMPLE SOLUTION to this problem.

Do not place your external drive on the left side of your Mac!

Put your external drive or external hard disk drive on the RIGHT side of the Mac.

This should take care of the problem immediately. When switching the drive over, power down the Mac to assure you don't accidently pull the plug out with the power on. If the problem persists, the drive or particular disks may be permanently damaged. Try the disks in another machine [...]. If the disks work on another machine, suspect a damaged drive and have it repaired.

David Garrigan

We wish to thank the author for permitting us to reprint this article from Southern Methodist University Computer Center's Newsletter.

New Anagram Decomposer for Microcomputers

Anyone with a taste for wordplay will be interested in CANDE (Computerized Anagram Decomposer), a new software package from Frakturvort Inc., a local developer of word-processing programs. Announced at the recent WEIRD '87 (Word Enhancement in Recursive Data Conference), CANDE has already cornered the new but fast-growing market for English language anagram decomposers.

CANDE has powerful capabilities allowing it to examine a string of up to 256 characters (letters, numbers, and punctuation marks) and derive all possible anagrams from it. Anagrams can then be sorted using the STRO procedure. A palindrome detector is promised for a future release.

CANDE was originally designed to run on a variety of mainframe computers, but the mainframe versions were never released due to an inexplicable lack of interest on the part of both academic and commercial sites. In its micro format, CANDE runs only on IBM PCs, compatibles, and clones at the moment, but CANDE/Apple is on the way. Although it has been available for only a short time, CANDE is now the favourite anagram decomposer of Scrabble® players, cryptic crossword enthusiasts, and James Joyce scholars.

Unfortunately, UTCS is unable to provide support for CANDE at present, but a CANDE users' group will be forming soon. Watch for announcements in coming issues of *ComputerNews*.

Avery Fewl

UTCS and PostScript Directions

Last summer, UTCS put in motion plans to make PostScript laser printers and a PostScript typesetter available. We felt that such devices would be of benefit to many people at the University of Toronto. Since then, many people have begun to use the printers and have come forward with many suggestions for possible improvements. We are always glad to have suggestions for improving service, but we need to point out some limitations under which the service currently works.

As is often the case on campus, the central issue is one of money. UTCS acquired the current equipment with funds that were available on a one-time basis. UTCS' budget provides continuing money only for ongoing maintenance to the typesetter. For several years, we have tried to get continuing funds for micro-related activities, but without success.

In the interest of making PostScript printing available to the University at the lowest possible price, UTCS has chosen to charge for the cost of consumables *only*. Under this approach, no matter how much printing is done, the revenue the printers generate is never going to provide extra money for purchasing new equipment, such as new fonts or a second typesetter. Any such acquisitions would have to be funded in some other way. Clearly, these days, money will never be available to make unlimited improvements.

We would like to enhance the PostScript printing service in ways that would benefit the largest number of users. Currently, there is no forum through which to reach a consensus on user needs and priorities. One possible forum could be a PostScript users' interest group that could, among other functions, advise UTCS on future directions. With the participation of this group, we would be in the best position to upgrade the service intelligently.

UTCS is already aware of two needs that may require action relatively soon. One is to establish how new fonts could be provided. The other is a larger issue: because the Linotronic 100 is a small machine, it can easily become too busy to handle the load. If this happens, how should

continued...

UTCS and PostScript Directions continued

more capacity be made available at the University?

With fonts, we can think of several alternatives (and, of course, there might be others):

1. Continue as currently with lowest possible prices, and no source of funding for extra equipment. Users could then buy and use their own fonts, if they wished. Perhaps a consortium of users could get together and buy fonts to be shared among themselves.
2. Increase charges to users, with extra money being directed toward possible upgrades to the current service.
3. Petition for other, current funds (either one-time, or continuing money) to be spent on new fonts. Since there are no plans to allocate any new continuing money solely for the PostScript printing service, either one-time or continuing money could be put to use by UTCS for projects other than PostScript. PostScript users would need to lobby for their own interests.

To add typesetting capacity, it might be appropriate for UTCS to acquire another machine. Alternatively, it might be more effective for another typesetter to be operated by some other department, with UTCS providing only advising support as needed.

I'd like to hear your comments on these or other issues. If you feel you have something to say about them, please call me at 978-3995.

John Bradley
BRADLEY at UTORONTO

Noise on Dial-in Lines

Being able to access your favourite remote computer from your home or office is a great convenience. The most common way of doing this is by using ordinary telephone lines with modems at each end. However, no technology is perfect, and one problem that can occur with this one is ''line noise.'' Random characters may pop up on your monitor screen. A message sent by the computer to you may be garbled along the way, as may a message sent by you to the computer.

Line noise can have many causes. One of the two modems involved could be faulty, or the telephone line could be noisy. The hisses, pops, and crackles you sometimes hear when using the telephone are translated into garbage characters by modems. Sometimes other components of the telephone system could be responsible.

The first step in solving a dial-in line noise problem is determining its cause. For this it is important to keep track of your noise problems. Do you get a little bit every so often? Have you usually had very little or no noise but lately have been getting a lot? Do you have noise when you access some computing installations but not others?

We are striving to make accessing UTCS systems over the telephone lines as noise free as possible. We need your cooperation in this endeavour. Please report any persistent or major line noise to Advising Services at 978-HELP. The following information is needed for us to determine the causes of line noise:

1. The date and time of the problem.

2. Your name and a telephone number where you can be reached.

3. The number you were dialing to, dialing from, and your modem baud rate.

4. A description of the problem.

We are aware of how frustrating line noise can be (many of us have had first-hand experience with it), and we appreciate your problem reports. From these reports we have already been able to discover and fix problems.

In 1986 and early 1987, many people dialing into computer systems on the University of Toronto

continued...

Noise on Dial-in Lines continued

campus, including UTCS, experienced line noise problems. About two months ago, Bell Canada changed the interface cards in the University's CENTREX III (the telephone switching system). The old cards were thought to be responsible for much of the line noise. After this was done, some users did notice a remarkable improvement. However, there still are some users who have severe line noise problems.

For the next month, UTCS will be conducting an experiment to try to determine whether CENTREX III is still responsible for the line noise. Five of our modems will be moved from their present telephone lines to lines not on the 978 CENTREX III exchange.

Selected users will be asked if they wish to be part of the experiment. Participants will be asked to dial-in using the standard numbers (978-3959 or 978-7239). If they experience line noise, they will be asked to log off and log on again using the special numbers.

We hope this experiment will yield clues to the nature of some of the current line noise problems. Since line noise can have so many causes, it takes time to solve it. Thank you for your patience.

Roni Moravan
RONI at UTORONTO

Accounting: University Fiscal Year End

Users are reminded that the University Fiscal Year End is April 30. This means that all blanket orders (Encumbrance Memos) raised for computing on a Departmental Appropriation Account (Ledger I) will expire with the approach of that date.

The Comptroller's Office has given UTCS a billing close-off date of April 27 for charges to blanket orders. Therefore, the last day for accruing machine charges, to be applied to the blanket order, is April 26.

The remaining few days of April charges (from April 27 through 30 at 5:00 p.m.) will be charged to the free balance of the appropriation, to the limit returned to the free balance. For example, if the remaining balance of a blanket order is $200 after billing and the total usage for the last seven days of April is $225, $200 will be billed to the free balance, and the remaining deficit of $25 will be carried forward and billed to the blanket order for the new budget year. The Accounting Services Office may be able to assist an account administrator in avoiding a deficit carryforward at the end of the budget year. Surplus funds in the free balance of the appropriation account may be carried forward. The last date for billing to an appropriation number through a Debit Memo is April 20.

In order to achieve uninterrupted service over the year end, account administrators are advised to do the following:

1. Supply the Accounting Services Office with a blanket order (Encumbrance Memo) for the new budget year by April 21. It should clearly show the BPOA holder's name, the BPOA number, the dollar amount, and the 1986/87 Encumbrance Memo number that it is replacing. In the case of a new account, where the BPOA and previous Encumbrance Memo numbers are not available, "NEW ACCOUNT" should be indicated.
2. If more than one CAN is associated with the BPOA, a listing should be made of the CANs to be used in the new year and the initial spending limit of each. A course name or project title should also be included if this information is desired on accounting reports for identification purposes. If new CANs are required and/or previous CANs are to be closed, this information should be included on the same listing.
3. Service Access Codes (SACs) should be checked to determine whether they are required in the new year. If they are, the expiry date should be checked and changed if necessary. Spending limits are another im-

continued...

Fiscal Year End continued

portant consideration. If changes to total spending limit and usage to date require resetting, this information should also be communicated before the end of April. It has been the practice of Accounting Services in past years to calculate the balance remaining on a GPJS SAC, use this figure to establish the new spending limit and set the accumulated usage amount to zero. For example: if, at midnight on April 30, the SAC shows a spending limit of $300 and usage to date of $275, the SAC would be reset to show the spending limit as $25, and usage to date as 0. This will be done automatically for all instructional and administrative GPJS SACs (not Research), unless you instruct otherwise. As you can see from the preceding example, establishing the old balance as the new spending limit may not be adequate to carry on work planned for May.

4. To ensure that the final billing includes all charges relating to a job run at 5:00 p.m. on April 30, jobs in the hold queue must be printed or purged by the user.

The discussion thus far has dealt mainly with the year-end situation as it normally affects instructional and administrative type users. Researchers are also affected by the expiration of departmental subsidy blanket orders. In this case, Departmental Computing Representatives are requested to supply Accounting Services with a copy of the new subsidy blanket order for each researcher by April 21.

We hope that this information is enough to help but not to confuse. Account administrators are encouraged to discuss any doubts or difficulties arising with accounts or access codes at anytime by calling the Accounting Services staff at 978-8703 or 978-7148.

Mail should be addressed as follows:

UTCS Accounting Services
255 Huron Street, Room 337
University of Toronto

You may prefer to pay us a visit on occasion. We are here from 9:00 a.m. to 5:00 p.m., Monday through Friday.

Marg Doherty
DOHERTY at UTORONTO

UNIX News

NetNorth and UNIX

The General Purpose UNIX machine has now formally joined the NetNorth and affiliated BITNET and EARN networks. At last count, there were over 1,700 hosts on these networks. Part of the reason for the slight delay in our joining was the need for the member sites to update their routing tables in order to recognize our machine. Happily, most sites now recognize our GP UNIX.

BITNET links research centres and many institutions of higher education at sites in the United States, Europe (EARN), Canada (NetNorth), and the Far East, particularly Japan. It is a "store-and-forward" network; information originating at a given site is received by an intermediate node, which then forwards it on the next link to its destination. On BITNET, you can share information by: electronic mail and terminal messages; transfer of documents, programs, and data; and access to BITNET server machines and associated data services.

Until recently, GP UNIX users have been able only to send mail to BITNET and affiliated networks. Now UTCS has obtained the *urep* software package from Pennsylvania State University and modified it where necessary to provide full function access to BITNET. As a result, GP UNIX is the first UNIX site at the University of Toronto to exchange mail, messages, and files directly with other BITNET nodes.

Mail

You can send mail to BITNET, NetNorth, or EARN sites by using the addressing format:

continued...

UNIX News continued

mail fred@machine.bitnet

Note that the syntax is important here. There may be no spaces around the "@", and the ".bitnet" must also be present (at least for the next few months). Even if the target site is on EARN or NetNorth, the ".bitnet" should always be included.

The GP UNIX service has been registered as "utorgpu" on BITNET. Thus, your return BITNET address on the UNIX service is of the form:

fred@utorgpu.bitnet

or simply:

fred@utorgpu

It is important to note that since the UNIX service is on more than one network, you cannot yet be reached at one address on all networks simultaneously. That time will come, and almost all the networks are striving for this goal, but for the immediate future, each user must be aware of the separate addresses used for the various networks. The one described above is for NetNorth/BITNET/EARN.

Messages

The ability to send messages on BITNET is a valuable one. It allows you to have short, interactive conversations with colleagues on machines in another province or country. Use the "to" command to send messages over BITNET. For example:

to george@utoronto hello there

This command would cause a message to appear at the terminal of the Userid GEORGE on the machine UTORONTO. The message would look like:

FROM UTORGPU(MOLNAR): hello there

Messages can also be used to send remote commands to systems set up to receive and act upon such commands. Certain machines on BITNET have file servers set up to send files that you request through commands in a specific format. For example, the BITNET Network Information Center's file server (NICSERVE) offers information on local software tools, BITNET sites and nodes, network policy information, and BITNET Executive Committee meeting minutes, among others.

The format of the message used to retrieve files from the NICSERVE file server would be of the form:

to nicserve@bitnic sendme fn ft

where fn is the filename and ft is the filetype of the particular file that is to be sent. For example:

to nicserve@bitnic sendme nicserve index

would tell the NICSERVE program to send the index of all available NICSERVE files. The message:

to nicserve@bitnic help

would tell the NICSERVE program to send the available helpfile.

Electronic mailing lists are available for BITNET users as well. The program that maintains these automated mailing lists is often called LISTSERV. As with the file server, it is possible to send a message to the LISTSERV program to request a list of available mailing lists. The format of this command is:

to listserv@utoronto list

or

to listserv@bitnic list

Once you have found a desirable mailing list, you can easily enroll in it. An attractive list would be, for example, the CRAY-L mailing list maintained on UTORONTO. The format of the command used to enroll on that mailing list would be:

to listserv@utoronto subscribe cray-l my_full_name

continued...

Please note "my_full_name" means your full name (e.g., George Doe) not your Userid. Naturally, the LISTSERV offers help as well, so a message sent to it of the form:

to listserv@utoronto help

would provide information on other available commands that can be sent to LISTSERV.

Anyone interested in making use of file or mailing-list servers is urged to contact Advising Services (978-HELP) to obtain information on the etiquette required on the network. Novices can unwittingly cause congestion, so it is best to talk to someone experienced in NICSERVE or LISTSERV before starting.

Finally, it should also be pointed out that users will experience delays in receiving output of some form after issuing the "to" command. The messages are forwarded along to the destination host on the network, and if one of the links is very busy then the message or the returning message or file will be delayed.

Remote Commands

You can also issue remote commands over the network. A remote command is one that is actually executed on a remote machine, with the output sent back to the user issuing the command. Typical usage of remote commands could be to check to see if a user is logged onto a remote machine before sending a message.

Sample remote commands would be:

netexec utoronto cpq names

which will execute the command "cpq names" on the VM/CMS machine known as UTORONTO.

The command:

netexec utorphys show users

will execute the command "show users" on the DEC VMS machine known as UTORPHYS.

The command:

netexec water who

will execute the command "who" on the DEC UNIX machine known as WATER.

The generalized form for sending remote commands is:

netexec host command

where "host" is the node name of the remote computer, and "command" is a valid command on the remote computer for whatever operating system that computer runs.

File Transfer

Lastly, it is possible to send and receive files over the BITNET network. The command used to send files is called "netcopy," and the command used to receive files once they have been sent is "netaccept."

The syntax used to send a file called "myfile" to the Userid GEORGE on UTORONTO would be:

netcopy george@utoronto if=myfile

Files are received on UNIX in an unusual way. After a file arrives in the spool area of the system, it is deposited in your home directory, and a message is sent to you indicating that a file has arrived but is not readable. You must issue the "netaccept" command before you can read the file. For example, if a file called NICSERVE.INDEX has been sent, then the following is needed to accept delivery:

netaccept NICSERVE.INDEX

NetNorth and the Cray Supercomputer

If you are also a Cray user, you can submit jobs to the Cray from GP UNIX via the RSCS interface to the Cray VM station software running on UTORONTO. The VM station's interface also permits you to control or check the status of your jobs on the Cray system. You can access this

continued...

UNIX News continued

remote interface with the ``netcopy'' and ``to'' commands.

To submit a job to the Cray from GP UNIX, you need only create the input file, beginning with the necessary Cray JCL, and then send the file to UTORONTO for processing. The syntax for submitting a job to the Cray through ``netcopy'' is:

netcopy craystn@utoronto if=myfile

where ``myfile'' is the complete input file. The ``netcopy'' command sends the input file to the pseudouser CRAYSTN on UTORONTO. This pseudouser then submits the job to the Cray and returns the output to your UNIX account when the job completes.

You can control your job or check its status by sending interactive messages to the pseudouser CRAYSTAT (*not* CRAYSTN). Use the ``to'' command to do this; its syntax is:

to craystat@utoronto crstat command [parameters]

where ``command [parameters]'' is a valid member of the remote subset of Cray station commands. For example:

to craystat@utoronto crstat status

displays the system status. The command:

to craystat@utoronto crstat help

asks CRAYSTAT@UTORONTO to send the current Help file listing all valid Cray station commands.

For further information on Cray job submission, please call CLSC User Services at 978-8255.

Further Information

Further information on the commands described in this article is available in the online manual pages on GP UNIX. If you have any questions on any of the above, or about the UNIX service in general, feel free to send electronic mail or call me at 978-8853.

Tom Molnar
molnar@gpu.utcs.toronto.edu (UofT Lan)
molnar at utorgpu (NetNorth)

New Tools for CMS MAIL

Two new commands are now available on the VM/CMS system: MAIL and MAILBOOK. They are part of a package that can help you organize your incoming electronic mail efficiently. The MAIL command also allows you to send electronic messages to other computer networks at the University of Toronto and around the world. Anyone with a VM/CMS account may use these commands. (UTCS offers free demonstrations of electronic mail. See the next article.)

You may ask, ``Why should I use the MAIL/MAILBOOK commands when I already have NOTE/RDRLIST?'' Some restrictions are inherent in the CMS NOTE command. With some exceptions, you can use NOTE to send messages within the NetNorth/BITNET/EARN networks only. But, there is the rest of the world out there on other networks that NOTE cannot access. The MAIL command can access any site within NetNorth/BITNET/EARN plus sites within networks such as ARPANET, *uucp*, CDNNET, and CSNET.

CMS RDRLIST restricts the filing options for incoming mail. If the ``User'' field of an incoming message does not match an entry in your NAMES file, and does not have an assigned NOTEBOOK, the message is filed in "ALL NOTEBOOK" by default. For example, if you receive a message from MARY at UTORONTO and you have neither a MARY entry in your NAMES file nor a file called MARY NOTEBOOK, the incoming message will be filed in ALL NOTEBOOK. Even though you may wish

continued...

New Tools for CMS MAIL continued

to file this message in GEORGE NOTEBOOK because it concerns your friend George, the RECEIVE command will still cause it to be filed in ALL NOTEBOOK. A special option is required to reroute this message to the proper NOTEBOOK.

The MAIL command allows you to receive all your messages into one central file called UNREAD NOTEBOOK. You can then file the messages in any NOTEBOOK you wish regardless of the contents of the user field. By using subcommands, you may FORWARD the mail to a colleague, or REPLY to the sender immediately. The REPLY subcommand allows you to easily incorporate the original message and a Subject Line into your response. The MAIL command also allows the use of the CC (complimentary copy) option.

A feature of the MAIL command is that once you receive your mail into the UNREAD NOTEBOOK, it will display the Subject Line of each individual message. RDRLIST does not have this feature.

After storing your messages into separate NOTEBOOKS, you can browse through each NOTEBOOK with the MAILBOOK command. These separate NOTEBOOKS also display the Subject Line of each message. The entire NOTEBOOK is displayed in a menu format, so with a stroke of a key, you can recall any particular message within that NOTEBOOK. If you had to use CMS XEDIT to browse through a NOTEBOOK, you would have to scroll through it manually to find each message.

If one of your NOTEBOOKs is becoming too large, you may use the MAILBOOK command and menu system to delete messages selectively from individual NOTEBOOKs.

How can you learn more about the MAIL/MAILBOOK commands? Use the CMS HELP command.

Type: **help mail** or **help mailbook**

There is also a manual. To browse or obtain a copy, use the DOCUMENT command and select MAILBOOK LISTING. If you are not familiar with the DOCUMENT command, type:

help document.

If you need help using the MAIL or MAILBOOK commands, call Advising Services at 978-HELP.

Steve Younker
YOUNKERat UTORONTO

Free NetNorth (Electronic Mail) Demonstrations

Anyone interested in using the NetNorth/BITNET/EARN communications network will want to attend one of our scheduled demonstrations. This network, accessible from CMS, reliably connects over a thousand universities and research institutes in Europe, Asia, and North America.

Sending mail, data, documents or other files on NetNorth is a very simple task that anyone can learn quickly; it is also very inexpensive. The demonstrations last just under an hour, and will include how to send mail and files to another institution and how to talk directly to someone on the network.

NetNorth demonstrations will be held at 4:00 p.m., on May 4 and May 11. If you would like to attend, please contact me at 978-4565 to reserve a place in the demo, as space is limited.

Irene Rosiecki
ROSIECKI at UTORONTO

WSCRIPT Version 86.1

Version 86.1 of WSCRIPT was made available on CMS starting March 30 to replace Version 85.1. It contains a number of interesting enhancements, in particular:

- Support for PostScript printers.
- Ability to print math output.
- Some ability to merge text and graphics on PostScript devices.

For a general outline on how WSCRIPT has been implemented in the UTCS environment and how to use it, please see the UTCS Guide to WSCRIPT.

The University of Waterloo has supplied new documentation as well: the *Formula Processor Summary* provides information on how to create mathematical output, while *Waterloo Script and a PostScript Printer* details support of PostScript printing.

The following WSCRIPT-related documents are available online through the DOCUMENT command:

UTCS Guide to WSCRIPT (LISTING=WSCRIPT)
WSCRIPT User's Guide (LISTING=WSCRPTUG)
WSCRIPT Reference Guide (LISTING=WSCRPTRF)
GML User's Guide (LISTING=GMLUG)
GML Reference Summary (LISTING=GMLRFSUM)
Waterloo Script and a Postscript Printer (LISTING=WSCRPTPS)
Formula Processor Summary (LISTING=WSCRPTFP)

As a reminder, WSCRIPT is a Class B product on CMS.

Vera Petrashkewych
VPET at UTORONTO

UTCS Language Processor Maintenance

If you are a VM/CMS user on either the UTORONTO or UTOREPAS machine and you access VS FORTRAN or PL/I through GETME, you may have noticed a cryptic message of the form:

VS FORTRAN 1.4.1 at PUT 8601

This message tells you the level of the source language processor (in this case Release 1.4.1) and the maintenance level of the processor (in this case PUT 8601).

Every month, more or less, IBM ships UTCS a series of Program Update Tapes (PUTs). These are numbered according to the year (86) and month (01) and contain all the known fixes to reported problems in the IBM software (i.e., in the source language processors and in the operating system components). Tapes exist for both the VM/CMS and MVS systems.

These fixes often contain errors of their own that could introduce new problems. To protect you from potentially serious processor bugs of this sort, which could cause delay and frustration, UTCS has established a language processor maintenance cycle. Here's how it works.

UTCS holds the PUTs for some months before using them for source language processor maintenance. The delay allows any new problems to become known and documented. After the waiting period, the fix tape is examined, and any erroneous fix is either not applied at all or replaced by a superseding fix. These superseding fixes often come directly from the IBM program support team here in Toronto.

At six month intervals, UTCS creates a "new" version of each IBM source language processor; the previous "new" processor, which was tested for the last six months, becomes the production version of the processor. In turn, the previous production version of the processor becomes the "old" or backup version of the processor. This switching is done every June and January on UTORONTO, UTOREPAS, and the MVS sys-

continued...

Processor Maintenance continued

tem. The same approach is taken and the same three sets of libraries (old, new, production) are created for non-IBM source language processors such as WATFOR-77 and the Waterloo C compiler.

Herb Kugel
KUGEL at UTORONTO

VM/CMS WATFOR-77 Version 1.5

WATFOR-77 Version 1.5 will soon be made available to users. Here are a few significant enhancements:

- Libraries of FORTRAN subroutines that have been compiled by IBM's VS FORTRAN compiler are now supported. This includes IBM 370 assembly language subprograms that follow the subprogram conventions for argument passing and linkage, as described by the VS FORTRAN Programming Guide.
- A set of XEDIT commands has been added to assist in compiling and debugging FORTRAN programs.
- Library subroutines have been added to retrieve the current date and time.
- Dynamic memory utilization has been improved.

Please watch the VM/CMS logon message for implementation details.

Herb Kugel
KUGEL at UTORONTO

Change Committee

Changes to Academic VM/CMS Machine Services

1. Pascal 2.2 was made production (January 13).

Changes to GP UNIX Machine Services

1. SCRIBE was discontinued on GP UNIX (February 2).
2. The VAX 11/750 system was decomissioned (February 9).
3. The Sun System was installed (February 9).

Changes to Other Systems and Services

1. The provision for SAC spending quotas and locking was made available on the SCS 750 and on the PLUTO 750 (March 1).
2. SAC spending quotas were also provided on the CRAY X-MP/22 (Februrary 23).

Beverly Scarborough
BEVS at UTORONTO

Personnel Changes

Andrew Mountain, UTCS' Facilities Coordinator at the Enginneering Annex, has left to pursue other endeavours.

Veronica Moravan, from Advising Services, has left UTCS to further her career.

UTCS Noncredit Short Courses

Many people are finding that their involvement with computers and information-processing systems is increasing. To meet the demands of our users, a number of short courses, both micro and mainframe, are offered on the various products and services supported by UTCS. Enrollment in these courses is restricted to faculty, graduate students, staff, and researchers.

Registration for short courses is required due to the limited seating capacity in the Education Facility and the number of terminals available for our hands-on courses. Registration forms may be picked up in the Engineering Annex, 11 King's College Road, Room 207.

A $10.00 Administration Fee per course is payable at the time of registration either by cash, cheque, or on a Customer Account Number (CAN). In addition, the CAN holder is responsible for any computer charges incurred during the hands-on mainframe courses.

Space is still available in the following courses in April:

SAS201 - Intermediate SAS
Date: April 20-24, 1987
Time: 12:00 - 1:00 p.m.

SAS/PC101 - Introduction to SAS on the IBM PC
Date: April 6-10, 1987
Time: 9:00 - 11:00 a.m. (April 6-9)
9:00 - 12:00 noon (April 10)

Date: April 27 - May 1, 1987
Time: 9:00 - 11:00 a.m. (April 27-30)
9:00 - 12:00 noon (May 1)

A handout describing all UTCS short courses is available in the Information Office, Engineering Annex, Room 206, and the Koffler Student Services Centre, Room 308.

Irene Rosiecki
ROSIECKI at UTORONTO

Introductory Cray Training

Two noncredit short courses, CRAY101 Introductory COS and FORTRAN, and CRAY102 Efficient Use of the System, are being offered to introduce experienced FORTRAN users to running jobs on the CRAY X-MP. Each course consists of five two-hour segments.

At present, each course carries a $5 materials fee. Participants must have the necessary CLSC computer accounts before they register. (To open accounts, please contact CLSC User Services, McLennan Physical Labs, Room 345.) All participants are required to register, since enrollment is limited to ten.

Course Descriptions

CRAY101 - Introductory COS and FORTRAN

This hands-on course will focus on skills required to run jobs on the X-MP without using permanent mass storage on the X-MP.

Topics: front-end station usage; COS job control language; Cray datasets; features of CFT and CFT77

continued...

Cray Training continued

FORTRAN compilers; and staging data from front-end computers.

Prerequisite: FORTRAN and a good working knowledge of editing and file management on a front-end computer.

Date: April 13-16, 1987
Time: 2:00 - 4:00 p.m. (April 13,14)
2:00 - 5:00 p.m. (April 15,16)

CRAY102 - Efficient Use of the System

This hands-on course will introduce some of the skills required to make efficient use of the X-MP.

Topics: vectorization on the Cray; the use of system libraries; FORTRAN optimization techniques; how and when to use the solid-state storage device; and the use of magnetic tapes on the X-MP.

Prerequisite: CRAY101 or equivalent experience.

Date: April 27 - May 1, 1987
Time: 2:00 - 4:00 p.m.

Course Registration

To register for either course, call me at 978-4565.

Irene Rosiecki
ROSIECKI at UTORONTO

UNIVERSITY OF TORONTO COMPUTING SERVICES
HOURS of SERVICE

GOOD FRIDAY and EASTER SUNDAY
VICTORIA DAY WEEKEND

The hours of service for the above holiday weekends will be announced via system Broadcast and HOTNEWS messages closer to the holiday weekend.

SALE

UTCS is offering great deals on terminals, printers, LSI and PDP equipment and components.

TERMINALS (various makes and models)

PRINTERS (hardcopy and line printer)

MODEMS and COUPLERS

Complete LSI and PDP-11 Systems and Components

Inquiries and bids should be directed to:

Mike Konoby
University of Toronto Computing Services (UTCS)
Sandford Fleming Building
Room SF4306
Toronto, Ontario
M5S 1A1
(416) 978-4549

Recent Acquisitions in the Computer Library

ACM SIGGRAPH/SIGART Interdisciplinary Workshop. Toronto, 1983. Motion: representation and perception, ed. by N. Badler and J. Tsotsos. New York, North-Holland, 1986.

Advances in computer graphics I. Enderle, Gunter et al, eds. Berlin, Springer-Verlag, 1986.

Advances in computer graphics II. Hopgood, F. Robert A. et al, eds. Berlin, Springer-Verlag, 1986.

Aiken, Richard C., ed. *Stiff computation.* New York, Oxford Univ. Press, 1986.

Alagic, Suad. *Relational database technology.* New York, Springer-Verlag, 1986.

Alexander, S. Thomas. *Adaptive signal processing: theory and applications.* New York, Springer-Verlag, 1986.

Andrews, Michael. *Computer organization.* Rockville, Md., Computer Science Press, 1987.

Barrett, William A., et al. *Compiler construction: theory and practice.* 2d ed. Chicago, Science Research Assoc., 1986.

Bibel, Wolfgang, and Ph. Jorrand, eds. *Fundamentals of artificial intelligence: an advanced course.* New York, Springer-Verlag, 1986.

Brodie, Michael L and J. Mylopoulos. *On knowledge base management systems: integrating artificial intelligence and database technologies.* New York, Springer-Verlag, 1986.

Bundy, Alan, ed. *Catalogue of artificial intelligence tools.* 2d ed. Berlin, Springer-Verlag, 1986.

Carberry, M. Sandra, et al. *Principles of computer science: concepts, algorithms, data structures and applications.* Rockville, Md., Computer Science Press, 1986.

Cohen, A.G. and J.R. Thomas, eds. *Artificial intelligence and its applications.* Chichester, Wiley, 1986.

COMPSTAT 1986. *Proceedings.* ed. by F. De Antoni et al. Heidelberg, Physica-Verlag, 1986.

du Toit, S.H.C. et al. *Graphical exploratory data analysis.* New York, Springer-Verlag, 1986.

Encarnacao, Jose Luis, et al, eds. *Product data interfaces in CAD/CAM applications: design, implementation and experiences.* Berlin, Springer-Verlag, 1986.

European conference on TEX for Scientific Documentation, 2d ed. Strasbourg, France, June 1986. *Proceedings,* ed. by J. Desarmenien. Berlin, Springer-Verlag, 1986.

Froberg, Carl-Erik. *Numerical mathematics: theory and computer applications.* Menlo Park, Cal., Benjamin/Cummings, 1985.

Gabor, G. and Z. Gyorfi. *Recursive source coding: a theory for the practice of waveform coding.* New York, Springer-Verlag, 1986.

Gecseg, Ferenc. *Products of automata.* Berlin, Springer-Verlag, 1986.

Gehani, Narain. *C: an advanced introduction.* Rockville, Md., Computer Science Press, 1985.

Gibbs, Norman Edgar and R.E. Fairley, eds. *Software engineering education: the educational needs of the software community.* New York, Springer-Verlag, 1987.

Grune, D. *On the design of ALEPH.* Amsterdam, Centre for Mathematics and Computer Science, 1986.

continued...

Computer Library continued

Hall, Marshall, Jr. *Combinatorial theory.* 2d ed. New York, Wiley, 1986.

Harbison, Samuel P. and G.L. Steele Jr., eds. *C: a reference manual.* Englewood Cliffs, N.J., Prentice-Hall, 1987.

Hill, Raymond. *A first course in coding theory.* Oxford, Clarendon Press, 1986.

Hohne, Karl Heinz. *Pictorial information systems in medicine.* Berlin, Springer-Verlag, 1986.

Hollnagel, Erik et al. *Intelligent decision support in process environments.* Berlin, Springer-Verlag, 1986.

James, Mike. *Classification algorithms.* New York, Wiley, 1985.

Janssen, T.M.V. *Foundations and applications of Montaque grammer, part 1: philosophy, framework, computer science.* Amsterdam, Centre for Mathematics and Computer Science, 1986.

Jones, Robin and I. Stewart. *The art of C programming.* New York, Springer-Verlag, 1987.

Kessener, Laurens, R.A. et al, eds. *Data structures for raster graphics.* Berlin, Springer-Verlag, 1986.

Kolodner, Janet L. and C.K. Riesbeck eds. *Experience, memory and reasoning.* Hillsdale, N.J., Lawrence Erlbaum Assoc., 1986.

Kunii, Tosiyasu L., ed. *Application development systems: the inside story of multinational product development.* Tokyo, Springer-Verlag, 1986.

Levy, Leon S. *Taming the tiger: software engineering and software economics.* New York, Springer-Verlag, 1986.

Lewi, Johan and J. Paredaens. *Data structures of Pascal, Algol 68, PL/1 and Ada.* Berlin, Springer-Verlag, 1986.

Liskov, Barbara and J. Guttag. *Abstraction and specification in program development.* Cambridge, Mass., MIT Press, 1986.

Mathews, John H. *Numerical methods for computer science, engineering and mathematics.* Englewood Cliffs, N.J., Prentice-Hall, 1987.

Rembold, Ulrich and R. Dillman ed. *Computer-aided design and manufacturing: methods and tools.* 2d ed. Berlin, Springer-Verlag, 1986.

Schroeder, Manfred R. *Number theory in science and communication with applications in cryptography, physics, digital information, computing and self-similarity.* 2d ed. Berlin, Springer-Verlag, 1986.

Schwartz, Jacob T., et al. *Programming with sets: an introduction to SETL.* New York, Springer-Verlag, 1986.

Shieber, Stuart N. *An introduction to unification-based approaches to grammar.* Stanford University, Center for the Study of Language and Information, 1986.

Staugaard, Andrew C., Jr. *Robotics and AI: an introduction to applied machine intelligence.* Englewood Cliffs, N.J., Prentice-Hall, 1987.

Theoretical Aspects of Reasoning About Knowledge. Monterey, Cal., March 1986. Proceedings, ed. by J.Y. Halpern. Los Altos, Cal., Morgan Kaufmann, 1986.

Wait, R. and A.R. Mitchell. *Finite element analysis and applications.* Chichester, Wiley, 1985.

Williams, Michael Roy. *A history of computing technology.* Englewood Cliffs, N.J., Prentice-Hall, 1985.

Stephanie Johnston

Documents at UTCS

All vendor-produced documentation may be ordered through the UTCS Information Office, Room 206, Engineering Annex. UTCS documents and selected vendor documents are also stocked there for purchase. For more information on prices, call Dale Wright at 978-4990.
Whenever feasible, documents are made available online, and users are encouraged to print their own copies. On the MVS and VM machines, special commands have been provided for this purpose.

To print online documents on:

IBM MVS	**IBM VM/CMS**	**GP UNIX**
WYLBUR users type "do document?" TSO users type "help document" APL users type ")LOAD 1 UTCSGUIDE<RETURN>HELP"	type "help document"	use *lpr* command

See examples at the end of next page.

UTCS Documents in hardcopy

New:

Previously announced:
- Academic's Guide to Microcomputer Systems
- Character Sets for Highspeed Printing
- UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction
- UTCS GUIDE TO PRODUCTS AND SERVICES: Basics
- UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting
- UTCS Catalogue: Access, Part 1
- UTCS Catalogue: Access, Part 2
- UTCS Catalogue: IBM MVS Utilities
- UTCS Catalogue: Numerical Products
- UTCS Catalogue: Statistics Products
- UTCS Catalogue: Text Products
- UTCS Guide to Census Tapes
- UTCS Guide to Tape Usage on VM/CMS
- UTCS Guide to Kermit
- UTCS Guide to Micro File Transfer Service
- UTCS Guide to Text Processing on GP UNIX

UTCS Documents online	**MVS MANUAL**	**CMS LISTING**	**GP UNIX**	**Forms Code**
New:				
Previously announced:				
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction	INTRO	INTRO	/usr/doc/utcs/intro	*
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics	BASICS	BASICS	/usr/doc/utcs/basics	*
UTCS Catalogue: Access, Part 1	ACCESS1	ACCESS1	/usr/doc/utcs/access1	*
UTCS Catalogue: Access, Part 2	ACCESS2		/usr/doc/utcs/access2	*
UTCS Catalogue: IBM MVS Utilities	MVSUTIL	MVSUTIL		*
Product-Function List	UTILLIST	UTILLIST		BXQD
UTCS Catalogue: Numerical Products	NUMCAT	NUMCAT		*
Product-Function List	NUMLIST	NUMLIST		BXQD
UTCS Catalogue: Statistics Products	STATCAT	STATCAT		*
Product-Function List	STATLIST	STATLIST		BXQD
UTCS Catalogue: Text Products	TEXTCAT	TEXTCAT	/usr/doc/utcs/textcat	*
UTCS Guide to BMDP	BMDP	BMDP		*
UTCS Guide to Census Tapes	CENSUS	CENSUS	/usr/doc/utcs/census	*
UTCS Guide to GP UNIX			/usr/doc/utcs/gpunix	*
UTCS Guide to GPJS	GPJSX	GPJSX	/usr/doc/utcs/gpjs	*
UTCS Guide to Highspeed Printing	PRINT	PRINT	/usr/doc/utcs/print	*
UTCS Guide to IBM MVS Online Storage	IBMDISK	IBMDISK		*
UTCS Guide to Kermit	KERMIT	KERMIT	/usr/doc/utcs/kermit	*
UTCS Guide to Micro File Transfer Service	MICROXFR	MICROXFR		*
UTCS Guide to Micro Laser Printing	MICRLASR	MICRLASR		*
UTCS Guide to SAS	SAS	SAS		*
UTCS Guide to SCRIBE (For printing instructions, see page 1 of document)		SCRIBE		*

** Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ Use the 87SET command. Type "help 87set".

Documents at UTCS continued

UTCS Documents online	MVS MANUAL	CMS LISTING	GP UNIX	Forms Code
UTCS Guide to Series/1 Terminal Use	SERIES	SERIES		*
3270 Emulation:				
Cybernex APL100 and Volker Craig VC404	CYBER	CYBER		*
DM1520	DM1520	DM1520		*
Hardcopy Terminal	HARDCOPY	HARDCOPY		*
IBM 3101	IBM3101	IBM3101		*
IBM PC Kermit	PCKERMIT	PCKERMIT		*
SOROC IQ	SOROC	SOROC		*
VT52	VT52	VT52		*
VT100	VT100	VT100		*
UTCS Guide to SPSS	SPSS	SPSS		*
UTCS Guide to SUBUTILS	SUBUTILS	SUBUTILS		*
UTCS Guide to Tape Usage on VM/CMS		CMSTAPE		*
UTCS Guide to Text Processing on GP UNIX			/usr/doc/utcs/text	*
UTCS Guide to TFW.MAK in SCRIBE		TFWMAK		*
UTCS Guide to TSO	TSOGD			*
UTCS Guide to UTDSUTIL	UTDSUTIL	UTDSUTIL		*
UTCS Guide to VM/CMS	CMSGD	CMSGD		*
UTCS Guide to WYLBUR	WYLINTRO			*
UTCS Rate Schedule (Commercial)		RATESCOM		‡
UTCS Rate Schedule (External)		RATESEXT		‡
UTCS Rate Schedule (Internal)		RATESINT		‡
UTCS WYLBUR Tutorial	WYLTUTOR			*
Other Documentation online				
CLSC Documents				
CLSC Guide to Computing on the CRAY from the VM/CMS Front End		CRAYGD		*
Kermit				
Kermit Protocol Manual	KERMITPM	KERMITPM		YXOE
Kermit User Guide	KERMITUG	KERMITUG		YXOF
VM Tape Documents				
TapeMap User's Guide and Reference		TAPEMAP		*
VMTAPE Messages and Codes		VMTMSGS		YXOE
VMTAPE User's Guide		VMTUSER		YXOE
VMSECURE				
VMSECURE User's Guide		VMSECURE		YXOE
Waterloo SCRIPT				
Reference Manual	WSCRPTRF	WSCRPTRF		YXLC
User's Guide	WSCRPTUG	WSCRPTUG		YXLC
Using SCRIPT in MVS/TSO	WSCRPTSO	WSCRPTSO		YXLC
Waterloo SCRIPT and a PostScript Printer	WSCRPTPS	WSCRPTPS		YXLC
Formula Processor Summary	WSCRPTFP	WSCRPTFP		YXLC
GML User's Guide	GMLUG	GMLUG		YXLC
GML Reference Summary	GMLRFSUM	GMLRFSUM		YXLC
OBS WYLBUR				
Messages and Codes	WYLMSGS			YXLD
Qwik Files	WYLQWIK			YXLD
Reference Summary	WYLREFCD			YXLG
Reference Manual	WYLREFMN			YXLD
7.0 Release Guide	WYLREL70			YXLC
User Guide	WYLUSER			YXLD
Electronic Mail				
A User's Guide to Electronic MAIL		MAILBOOK		YXOC

In these examples, the document to be printed is the UTCS Guide to Census Tapes (MANUAL/LISTING=CENSUS).
<RETURN> means RETURN or ENTER key.

TSO:

```
document census forms(yxle) <RETURN>
```

WYLBUR:

```
do document <RETURN> and respond to the prompts.
```

CMS:

```
document <RETURN> <RETURN>
laser census listing (forms yxle <RETURN>
```

GP UNIX:

```
nohup ipr -8p -fyxle /usr/doc/utcs/census & <RETURN>
```

---

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ *Use the 87set command. Type "help 87set".*

Consulting and Enquiries

Applications Support & Advising Supervisor	Alex Nishri	KC308	978-7109
External Marketing Consultant	Ihor Prociuk	KC308	978-6875
Erindale College	Joe Lim	ER2035	828-5311
Scarborough College	William Barek	SC626	284-3173
Information Office	Dale Wright	EA206	978-4990
Account & Access Code Enquiries (U of T)	tba	MP337	978-8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	978-7148
IBM PC Maintenance	Kam Mark	SF4306	978-5050
Tape Library (Academic Services)	Rosa Ciddio	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
Terminal Rentals	Louise Hunt	SF4306	978-3787
U of T Computer Library	Stephanie Johnston	EA206	978-2987
UTCS Noncredit Short Courses	Irene Rosiecki	EA207	978-4565

Consulting & Advising Services		300 Baud Interactive Services	978-6200
Phone:	978-HELP	1200 Baud Interactive Services	978-3959
CMS, TSO and GP UNIX userids:	ADVISOR	2400 Baud Interactive Services	978-7239
CMS Userid for mail problems:	POSTMSTR	Datapac	4320 0056
System Status Enquiries (GP UNIX)	978-4318	Telnet	03020432000056
System Status Enquiries (IBM)	978-7393	Tymnet	<backspace>DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	978-8948	WCJ at UTORONTO *
Associate Director	Eugene Siciunas	MP350	978-5058	EUGENE at UTORONTO *
Managers:				
Communications & Technical Support	Norman Housley	SF4306	978-4967	NORMAN at UTORONTO *
Internal Systems & Administration	Ron Vander Kraats	MP350	978-4428	RVK at UTORONTO *
Operations	Dr. Bob Chambers	MP350	978-7092	
Systems	Bill Lauriston	MP331	978-3579	BILL at UTORONTO *
User Interface	Don Gibson	KC308	978-7331	DON at UTORONTO *

Committees on Computing

Committee on Administrative Computing	Chair	Janice Oliver	978-4322	
Research Board Standing Committee on Computing	Chair	Prof. C.C. Gotlieb	978-2986	
UTCS Board	Chair	Prof. D.M. Nowlan	978-4984	NOWLAN at UTORONTO *
Supercomputer Users' Group at U of T	Chair	Prof. P.P. Kronberg	978-4971	

ER = Erindale
KC = Koffler Centre
SF = Sandford Fleming
SC = Scarborough
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** Koffler Centre, 214 College St., Room 308.
- **Engineering Annex (EA, CDF),**11 King's College Road, Rooms 103, 107, 107B, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Rooms S624, S625, S627, S628, S628A
- **Sidney Smith (Sidney),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 107
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres.

Sites	**Hours of Access**				**Restrictions***	**Advising**
	Mon-Thurs	**Fri**	**Sat**	**Sun**		
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	No
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Educ	9:00-18:00	9:00-18:00	closed	closed	Research**	978-HELP
Erin (2039)☐	9:00-17:00	9:00-17:00	12:00-16:00	12:00-16:00	Research	Rm 2005
(2045)	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	Rm 2005
(235†)	8:00-22:00	8:00-17:00	closed	closed	None	Rm 2046
Robarts	8:30-24:00	8:30-24:00	9:00-17:00	13:00-22:00	None	978-HELP for Research
Scar	24hrs°	24hrs°	24hrs°	24hrs°	Research Undergrads	Rm S626 Rm S626-A
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St.Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	Arranged by College
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	None	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses. ☐ key access available.
° printers available some of the time. † access restricted to building hours.

Advising Hours

CAO	Monday through Friday, 10:00 - 18:00
Scarborough	Monday through Friday, 09:00 - 16:30, Wednesday and Friday 18:00 - 24:00, Saturday 10:00-17:00
Erin	Monday through Friday 09:00 - 20:00

Sites	**PACX**	**Network Terminal Server**	**CMS Terminals**	**Printers**	**DCS/Micros**
CDF	Y	N	N	Y	N
EA	N	Y	Y	Y	N
Educ	Y	N	N	N	N
Erin	Y	Y	N	Y	N
Robarts	Y	N	Y	Y	Y
Scar	Y	Y	N	Y	N
Sidney	N	Y	Y	Y	Y
St.Michael's	Y	N	N	Y	Y
Trinity	N	N	Y	Y	Y
Victoria	Y	N	N	Y	Y

(Y=yes, N=no)

UTCS Services

The principle mandate of UTCS is to plan, implement, and operate computer facilities and "common-carrier" networks, and to plan and support divisional, departmental or project computer facilities as requested.

UTCS Centrally Owned and Managed

Systems

IBM MVS

- TSO, WYLBUR, APL, Batch
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system
- Xerox 8700 Laser Printing

IBM VM/CMS

- General Purpose Timesharing; access to NetNorth, BITNET, and EARN networks; access to Cray X-MP
- 4381-P02 processor, 16 megabytes of memory
- CP operating system, VM/SP HPO R3.4
  CMS timesharing system, VM/SP Release 3
  RSCS spooling system, Release 3
  CRAY station Release 4

GP UNIX
Technical Assistance: 978-8853

- General Purpose Timesharing under SUN UNIX 3.2
- SUN 3/280, 8 megabytes of memory
- access to Linotronic typesetter
- offers a sophisticated and powerful environment for text processing
- offers a sophisticated programming environment suitable for commercial software development or testing
- full access to USENET, an electronic technical information exchange facility
- offers excellent electronic mail facilities and ability to send or receive mail from most computer networks world wide, such as UUCPNET, ARPANET, NetNorth, BITNET, CSNET, CDNNET

Services
Communications & Technical Support
Primary Phones: 978-3787, 978-4967

- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains communications and computer systems, particularly IBM PCs and Micro Vaxes, on a contract basis or on a cost-per-call basis.
- provides consulting on computer systems technology and installs computer systems
- provides access between the IBM systems and machines using UNIX, VMS and other operating systems. Ethernet and Pronet technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides consulting on local area networking g and installs LANS
- provides access to NetNorth (BITNET), the North American Universities Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis.

User Interface Group
Primary Phone: 978-HELP

- provides advising, consulting and documentation on:
  - command languages
    including CMS, TSO, WYLBUR, JCL and UNIX
  - high level languages
    including FORTRAN, and PL/I
  - packages and libraries
    including SAS, SPSS-X, BMDP, IMSL and NAg
  - editors and formatters
    including XEDIT, TSO, WYLBUR, ed, SCRIBE, nroff/troff
- provides general micro support
  - selection consulting for hardware and software
  - Micro Lab for evaluation of hardware and software
  - advice on University discounts
  - media conversion and data transfer
  - operates UTCS Microcomputer Bulletin Board System
  - offers Micro Laser Printing Service
  - offers 35mm slide production service using Polaroid Palette
  - administers Local Area Network of PCs for research use
- high quality typesetting
- installs and maintains application packages
- provides courses on the more popular services

Facilities Managed by UTCS

Administrative Computing

- administrative IMS/VS, DB/DC, DB2, Batch and TSO
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

UNIX SAS (Statistical Analysis Services)

- UNIX Statistical Analysis Service (Dept. of Statistics only)
- PDP-11/70, 4 megabytes of memory
- UNIX Seventh Edition
- SUN 3/180
- SUN 3/75
- SUN 2/120
- SUN 3.2 UNIX

Computer Disciplines Facility/VAX

VAX-11/780, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory

- Computer Science interactive access
- UNIX (Berkeley UNIX 4.2BSD)

Computer Disciplines Facility/PC

- 97 TI Professional Computers connected in a Local Area Network
- introductory Computer Science instruction
- MS-DOS with Turing environment

Scarborough College Systems

VAX-11/750, 5 megabytes of memory
VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Erindale College Systems

VAX 8200, 8 megabytes of memory

- instructional access using VMS
- research access

VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Institutional Relations System

VAX-11/750, 8 megabytes of memory

- database services to the owner departments using VMS

EPAS Facility

- 4361-5 processor, 16 megabytes of memory
- general VM/CMS services to the owner departments

Centre for Large Scale Computation (CLSC)

- Cray Research Inc. X-MP/22
- 2 processors, 2 megawords main memory
- solid state disk (SSD) with 16 megawords of storage
- COS 1.15 operating system
- VAX-11/750 + microVAX II providing VMS front-end services
- VM front-end services provided by UTCS 4381-P02

Software List

Each programming language or package available at UTCS has a support level. In general, Class A Products receive full support, Class B limited support (as time and resources allow), Class C no active support. For complete details of UTCS product support policy, see the UTCS GUIDE TO PRODUCTS AND SERVICES:Introduction.

MVS SOFTWARE

MVS Package/ Compiler	Support Level	Version
Graphics Packages		
PLOTBASIC (FORTRAN)	A	
PLOTBASIC EXTENDED ROUTINES	A	
SAS/GRAPH	A	82.4; 5.08
SURFACE II	C	
ISPF/PDF	B	1
WYLBUR	A	7.0
Languages		
APL (Sharp)	B	May 83
ALGOLW (Stanford)	C	n/a
ASSEMBLER(F)	C	2.1
A.A.E.C. PASCAL	C	2.0
FORTRAN H EXT.	B	2.2.1
LISP	C	
MARKEXAM	C	
PL/C	C	
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.0
SNOBOL 4	C	3.5
SPITBOL	C	
UTCS FORTRAN UTILITIES	B	
VS COBOL	C	2.4
VS FORTRAN	A	1.4.1
WATBOL	C	V3L2
WATFIV	B	
WPASCAL	C	(U of Waterloo/ West Valley Joint Community College Version)
Numerical Packages		
DYNAMO	B	4.07
EISPACK	C	4
FORMAC	C	
FUNPACK	C	
GPSS	A	Rel.1, Mod. Level 4
IMSL	A	9.2
LINPACK	C	
MINOS	C	4.0
MINPACK	C	1
MPSX	C	Rel. 1, Mod. Level 6
NAg	A	Mark 11
Statistical Packages		
BMD	C	
BMDP	A	Level 85
GENSTAT	C	4.04B
IMSL	A	9.2
NAg	A	Mark 11
NTSYS	C	Dec. 1982
SAS	A	82.4; 5.08; 5.15
SPSS	C	9.1
SPSSX	A	2.1
TSP	C	3.5
Text-Processing Packages		
COGS(Concordance Generating System)	B	3.1
KWIC	C	
OCP (Oxford Concordance Program)	C	1.4
Waterloo SCRIPT	B	85.1
Utilities		
DSMAP	A	
FILEBOL	C	
GRIPE	A	
IBM UTILITIES		
IEBGENER	A	
IEBCOPY	A	
IEHMOVE	A	
DFSORT	A	6.0
TAPEPRT	A	
TAPEXRAY	A	
TCOPY	A	
UTCS FORTRAN UTILITIES	B	

VM/CMS SOFTWARE

VM/CMS Package/ Compiler	Support Level	Version
Communications Packages		
FTS	A	
Kermit	A	
MAIL/MAILBOOK	A	86.359
MICROLASER	A	
Graphics Packages		
SAS/GRAPH	A	82.3; 5.08; 5.16
PLOTBASIC(FORTRAN)	C	
Languages		
ASSEMBLER(F)	C	
Concurrent Euclid	C	1.9
FORTUTILS	A	2.0
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.1
REXX	A	
SNOBOL 4	C	3.5
Turing	C	
VS FORTRAN	A	1.4.1
VS PASCAL	C	2.1; 2.2
Waterloo C	C	1.2
WATFIV	C	V2L0
WATFOR-77	A	1.3
Numerical Packages		
IMSL	A	9.2
Linpack	C	
Statistical Packages		
BMDP	A	Level 83
IMSL	A	9.2
Minitab	B	82.1; 5.1
SAS	A	82.3; 5.08; 5.16
SPSSX	A	2.1
Text-Processing Packages		
SCRIBE	A	4(1400)-1
Waterloo SCRIPT	B	85.1
XEDIT	A	
8700 Pseudotypesetting	A	n/a
MICROLASER	A	
Utilities		
FORTUTILS	A	2.2
TPRINT	C	

Software List continued

UNIX SOFTWARE

UNIX Package/ Compiler	Support Level	Versinn
Communications Packages		
kermit	B	4C(058)
macget/macput	C	
netcopy, netexec, to (NetNorth Tools)	B	
xmodem	C	
ftp, rsh, rlogin, telnet, rcp (Access via TCP/IP to most of the networked machines on all three campuses)	B	
rn/Pnews	B	
mail, mh, Mail		
rje	B	
Languages		
cc	A	
f77	C	
ratfor	C	BSD std.
ttc	C	
pc	C	BSD std.
yacc	C	
awk	C	
adb,dbx	C	BSD std.
Text-Processing Facilities		
ed	A	
vi	C	
emacs	C	
spell	C	
diction/explain	C	
eqn	A	
tbl	A	
pic	C	
troff	A	
nroff	A	
TeX	C	
Utilities		
crypt	A	BSD std.
compress	C	BSD std.
csh	B	BSD std.
diff	A	BSD std.
grep	A	BSD std.
lpr	B	
learn	C	BSD std.
patch	C	
sed	A	BSD std.
sort	A	BSD std.
sh	A	BSD std.
tar	A	BSD std.
uniq	A	BSD std.

MICROCOMPUTER SOFTWARE

The following are microcomputer software packages for which UTCS can provide either support or some information. As with mainframe products, micro packages receive full support (Class A), limited support (Class B), or no active support (Class C). The specific criteria differ from those for mainframe classes and are outlined in the Academic's Guide to Microcomputer Systems.

Package/ Compiler	Support Level	Version
Communications Packages		
Kermit (MS-DOS)	A	2.27d
Kermit (APPLE II)	A	
Kermit (CP/M)	C	
Kermit Macintosh	B	
PC TALK3	C	
PC PLOT III	A	
ProComm	A	2.42 UT
MacTerminal	B	
WYLBUR/PC	C	
Database Managers		
AskSam	C	2.2
Clipper	B	
DATAEASE	B	
dBASE II (CP/M)	B	
dBASE II (MS-DOS)	C	
dBASE III	A	1.1
dBIIICompiler	B	1.1
FoxBASE	C	2.14u
Notebook II	B	2.03
REFLEX	B	
ViewFinder III	B	
ZyINDEX	B	
Graphics Packages		
DR HALO	C	
Microsoft CHART (Macintosh)	C	
MacPaint	B	
35mm Express	B	
Languages		
BASIC	A	
Microsoft FORTRAN	C	
TURBO Pascal	B	
WATFOR-77	A	
Operating Systems, Utilities		
APPLE Turnover	A	
CP/M	B	
FASTBACK	B	
PC-DOS	A	
Sidekick	B	
SuperKey	C	
TURBO Lightning	C	
XenoDisk	A	1.41
Spreadsheet Packages		
APPLEWORKS	C	
Lntus 1-2-3	B	2.01
Multiplan (Macintosh)	C	
Statistical Packages		
MINITAB	C	
PowerStat	C	1.04
SAS/PC	A	6.02
SPSS/PC +	A	
Statprn	C	2.0c
Word-Processing Packages		
Gutenberg Senior	C	
FinalWord II	B	2.0
MacWrite	C	
Microsoft Word (MS-DOS)	B	2.0
Microsoft Word (Macintosh)	B	
Nota Bene	C	
T^3	B	
Volkswriter Scientific	C	
WordPerfect	A	4.1; 4.2
WordStar	B	

UTCS COMPUTERNEWS Subscription Request Form

If you wish to have your name and/or address added, changed or deleted from our *COMPUTERNEWS* mailing list, please complete this form.

Please ☐ add

☐ change

☐ delete my name and address.

NAME, ADDRESS and TELEPHONE, in full	PREVIOUS NAME and ADDRESS, in full (or include your old mailing label)
---	---
---	---
---	---
---	---
---	---

Check here if you can receive *COMPUTERNEWS* by campus mail. ☐

Comments on this issue of *COMPUTERNEWS.*

------------------------------FOLD HERE------------------------------

Return to:

COMPUTERNEWS
University of Toronto Computing Services
McLennan Physical Laboratories
Room 350
Toronto, Ontario
M5S 1A1

UNIVERSITY OF TORONTO
COMPUTING SERVICES
TORONTO, CANADA
M5S 1A1